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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

This application of:

HOGE *et al.*

Serial No.: 08/377,450

Filed: January 24, 1995

For: **Helical Scan Transport For Single
Reel Tape Cartridge**

Art Unit: 2312

Examiner: Korzuch, W. R.

Atty Docket: 1411.0210000

Brief on Appeal Under 37 C.F.R. § 1.191

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

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INTRODUCTION

Pursuant to the provisions of 37 C.F.R. § 1.191 *et seq.*, Appellants hereby appeal to the Board of Patent Appeals and Interferences (the "Board") from the Examiner's Final Rejection dated March 14, 1996. A Notice of Appeal was timely filed with the requisite extension fees on June 25, 1996, in accordance with 37 C.F.R. § 1.8. This Brief on Appeal is being filed in triplicate (37 C.F.R. § 1.192(a)) and is accompanied by the requisite fees (37 C.F.R. §§ 1.192(a) and 1.17(f)).

Appellants presently intend to request an oral hearing before the Board. A formal request for oral hearing will be submitted following mailing of the Examiner's Answer, in accordance with 37 C.F.R. § 1.194(b). In the event the Examiner does not, for any reason, issue an Examiner's Answer but does not withdraw the final rejection and allow this application in response to the Brief on Appeal, Appellants request that the Board consider this paper as a request for an oral hearing. The Assistant Commissioner is then authorized to charge the fee for such request under 37 C.F.R. § 1.17(g) to the undersigned's Deposit Account No. 19-0036.

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REAL PARTY IN INTEREST

The parties listed in the caption of the brief have assigned all interest in the application from which the instant appeal is taken to:

Storage Technology Corporation
2270 South 88th Street
Louisville, CO 80028-4309.

Thus, Storage Technology Corporation is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellants, Appellants' legal representative, or assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the instant appeal.

STATUS OF CLAIMS

Claims 1, 3-5, 7-9 and 11-12 are pending in the instant case. Claims 2, 6 and 10 are canceled. Claims 1, 3-5, 7-9 and 11-12 are finally rejected and are on appeal in the instant case. The claims on appeal are reproduced below in Appendix A. Claims 1, 5 and 9 are independent claims. Claims 3 and 4 depend directly or indirectly from claim 1. Claims 7 and 8 depend directly or indirectly from claim 5. Claims 11 and 12 depend directly from claim 9.

This application is a file wrapper continuation ("FWC") under 37 C.F.R. § 1.62 of parent application number 08/060,653, originally filed on 5/13/93 with claims 1-12.

Amendment A was submitted after final rejection on December 19, 1994 in response to the final Office Action, dated September 21, 1994. Amendment A amended claims 1, 5 and 9, and canceled claims 2, 6 and 10. Amendment A was not entered after final, but was entered upon the filing of the FWC. Amendment A was successful in overcoming the rejections under § 112, second paragraph, but was unsuccessful in overcoming the § 103 rejections.

Amendment B was submitted on November 30, 1995 in response to the first Office Action, dated September 21, 1994. Amendment B amended claims 3, 7 and 11 to remove dependence on canceled claims. Amendment B was accompanied by an original, executed Declaration under 37 C.F.R. § 1.132 (accompanied by Exhibits 1 and 2). Amendment B, which was entered, was not deemed sufficient to overcome the rejections under § 103.

No claim stands allowed.

STATUS OF AMENDMENTS

The Final Office Action, dated March 14, 1996, ("Final Action") indicated that Amendment B had been entered. There are no unentered amendments in this application.

SUMMARY OF THE INVENTION

The present invention relates to a system for storing digital data on magnetic recording tape, and more specifically, to the storage of digital computer data in helical format on a magnetic tape housed within a single reel tape cartridge. The data storage industry has conventionally used the single reel tape cartridge for the storage of digital data. Conventional helical format systems (e.g., video cassette recorders) store data on magnetic tape housed in two-reel cassettes. The video systems are not compatible with single reel cartridges. *See* page 3, lines 7-9 and lines 13-16 of the Specification.

Data is currently stored on single reel tape cartridges in a multi-track (e.g., 18) longitudinal format. It is known in the industry, however, that using a helical scan data storage format would allow approximately a 100 times increase in storage capacity. In other words, the typical single reel tape cartridge would have a helical scan storage capacity of 25 gigabytes per cartridge rather than the 200 megabytes of the longitudinal format. *See* page 2, lines 18, through 24 of the Specification.

The data processing industry stores large amounts of digital data on single reel tape cartridges. For automated storage and handling of large numbers of single reel tape cartridges, automated mass storage systems have been developed. For example, the 4400 automated cartridge system (ACS) from Storage Technology Corporation, Louisville, Colorado, U.S.A., is capable of storing up to 6,000 single reel tape cartridges. The 4400 ACS can quickly locate a selected cartridge and load it into a cartridge transport for read/write operation. The Model 4400

ACS typically has between one and four single reel tape cartridge transports associated with it. *See* page 2, lines 4 through 11 of the Specification.

Helical scan technology holds promise for increasing the storage capacity of the 4400 ACS. The 4400 ACS has a total capacity of 1.2 terabytes (1.2×10^{12} bytes) when data is stored in longitudinal format. *See* page 2, lines 12 through 14 of the Specification. The 4400 ACS would provide a total storage capacity of 150 terabytes if data were stored in helical scan format. *See* page 2, lines 21 through 24 of the Specification. Changing the data storage format for a cartridge, however, necessitates that a new tape transport be developed to read and write data in that format. However, the cost for developing such a new helical transport for single reel cartridges is extremely high.

Conventional helical scan transports are not compatible with single reel cartridges. It has been proposed, however, that a cassette may be emulated in such helical format systems by positioning a single reel tape cartridge alongside the take-up reel of the helical format system. *See* page 3, lines 21-24. Unfortunately, a helical transport that emulates a cassette by placing the take-up reel adjacent the supply reel of the cartridge has a form factor that is not compatible with the 4400 ACS. That is, the physical layout and dimensioning of the 4400 ACS would not allow the resultant transport to be used with existing 4400 ACS equipment without substantial modification. *See* page 3, lines 4 through 15 of the Specification.

The present invention solves these problems and produces a *helical scan transport* with a *form factor* (*i.e.*, physical dimensions and layout) compatible with that of conventional longitudinal transports currently used with the Storage Technology Corporation 4400 Automated Cartridge System. (*See*, Specification, page 5, lines 13-20). This is accomplished by leveraging

technology from the video industry and adapting existing helical technology to work with a single reel cartridge and still meet the *form factor* of the 4400 ACS. With minimal development cost, the present invention increases the storage capacity of a single reel cartridge so that the capacity of a typical automated cartridge system is increased from, for example, 1.2 terabytes to 150 terabytes.

ISSUES

The issues involved in this appeal are:

Whether claims 1, 3, 4, 9, 11 and 12 define patentable subject matter under 35 U.S.C. § 103 in light of U.S. Patent No. 4,991,037 issued to Shimizu *et al.* ("Shimizu") in view of U.S. Patent No. 4,399,959 issued to Godsoe *et al.* ("Godsoe") further in view of Appellants' admitted prior art; and

whether claims 5, 7 and 8 define patentable subject matter under 35 U.S.C. § 103 in light of U.S. Patent No. 4,991,037 issued to Shimizu *et al.* ("Shimizu") in view of U.S. Patent No. 4,399,959 issued to Godsoe *et al.* ("Godsoe") further in view of Appellants' admitted prior art, and further in view of in view of U.S. Patent No. 4,928,245 issued to Moy *et al.* ("Moy").

GROUPING OF CLAIMS

For this appeal, claims 1, 3-5, 7-9 and 11-12 should be considered together.

ARGUMENT

A. Introduction

The Examiner has finally rejected claims 1, 3, 4, 9, 11 and 12 under 35 U.S.C. § 103 as allegedly being unpatentable over U.S. Patent No. 4,991,037 issued to Shimizu *et al.* ("Shimizu") in view of U.S. Patent No. 4,399,959 issued to Godsoe *et al.* ("Godsoe") further in view of Appellants' admitted prior art. The Examiner has finally rejected claims 5, 7 and 8 under 35 U.S.C. § 103 as allegedly being unpatentable over U.S. Patent No. 4,991,037 issued to Shimizu *et al.* ("Shimizu") in view of U.S. Patent No. 4,399,959 issued to Godsoe *et al.* ("Godsoe") further in view of Appellants' admitted prior art, and further in view of in view of U.S. Patent No. 4,928,245 issued to Moy *et al.* ("Moy"). For the reasons set forth below, Appellants respectfully request that the Board overturn these grounds of rejection.

1. Summary of the Shimizu Reference

Shimizu discloses a tape transport for single reel cartridge tapes. More specifically, Shimizu discloses a single reel cartridge tape transport having a chassis, an elevator assembly and a take-up reel. The Shimizu tape transport is designed to minimize the number of driving means (*See* Shimizu, column 2, line 38) and to minimize the size of the tape transport (*See* Shimizu, column 2, line 63). To this end, Shimizu discloses a single motor performing the functions of: opening of the tape elevator housing to receive the tape cartridge; moving the tape

elevator housing from the insertion/ejection position to the withdrawal/rewind position; pivotally engaging and threading the leader block from the tape cartridge to the take-up reel; and ejecting the tape cartridge from the elevator housing. (*See* Shimizu, column 2, line 43 through column 3, line 28.)

2. *Summary of the Godsoe Reference*

Godsoe discloses a constant force windup spring web threading system for single reel cartridge tapes. Godsoe discloses the windup system for threading a leader block and tape from a single reel tape cartridge to a take-up reel. The form factor of the Godsoe constant force windup spring web threading system is designed to allow the use of the constant force (also known as a "negator") spring, which allows the threading system to thread the tape from the single reel tape cartridge to the take-up reel without the application of an external force (i.e., additional drive motors). (*See* Godsoe, column 3, lines 1-8.) A spool is attached to the leader block of the tape cartridge, and the constant force spring winds around a spool drawing the leader block from the tape cartridge, along the tape threading path and into the take-up reel. The negator spring of Godsoe necessitates a substantially linear tape path between the tape cartridge and the take-up reel in order for the spring to properly draw the leader block from the tape cartridge to the take-up reel.

3.. *Summary of Appellants' Admitted Prior Art*

At page 11, lines 18-27, of the Specification, Appellants state that the preferred embodiment of the invention uses a helical deck from the commercially available AJ-D350 ½" digital studio video tape recorder, available from Panasonic Broadcasts Systems Co., Secaucus, New Jersey. The Panasonic AJ-D350 helical deck is adapted to read and write ½" magnetic tape in helical scan format.

4. *Summary of the Moy Reference*

Moy discloses an automated cartridge system for storing, reading and writing large numbers of single reel tape cartridges. The automated cartridge system of Moy is of the type to which Appellants' invention provides greater storage capacity. Moy only discloses the use of longitudinal format single reel tape cartridge transports with the automated cartridge system.

5. *Summary of Appellant's Remarks with Respect to Claims 1, 3-5, 7-9, 11 and 12*

Appellants offer the following remarks in support of the patentability of the invention as recited in claims 1, 3-5, 7-9, 11 and 12. First, there is no motivation to combine the Shimizu and Godsoe references because the combination results in the destruction of the references' intended function. Second, Appellants submit that the extraordinary commercial success and industry embracement of Appellants' claimed invention are evidence that Appellants' claimed invention

would not have been obvious to one of ordinary skill in the relevant art. Finally, neither Appellants' admitted prior art, nor the automated cartridge system of Moy remedy the defects of the Examiner's improper rejection under §103.

- a. *There is no motivation to combine the Shimizu and Godsoe references because the combination results in the destruction of their intended function.*

As stated above, Shimizu discloses a tape transport with a single motor performing the functions of: opening the tape elevator housing to receive the tape cartridge; moving the tape elevator housing from the insertion/ejection position to the withdrawal/rewind position; pivotally engaging and threading the leader block from the tape cartridge to the take-up reel; and ejecting the tape cartridge from the elevator housing. The functionality of Shimizu is made possible by the use of a complex system of levers and cams. (See Shimizu, column 2, lines 34-65 and FIG. 1.)

Godsoe, on the other hand, discloses the use of a constant force windup spring web threading system for single reel cartridge tapes. The single spring draws the leader block from the tape cartridge to the take-up reel in a substantially linear tape threading path. (See Godsoe, FIG. 1.)

Combining of the motor driven tape transport of Shimizu with the spring web threading system of Godsoe results in the destruction of the intended function of the Shimizu reference. The design and implementation of the complex series of cams and levers of Shimizu will not allow a substitution of a "constant force" spring for the transport drive motor. The substitution

of the "constant force" spring and a substantially linear tape path of Godsoe would render the insertion/ejection, pivotally engaging and threading and tape cartridge ejecting structure of the Shimizu reference *inoperative*, thereby destroying its intended functionality. The Examiner's statement of motivation to combine the Shimizu and Godsoe references is exactly what causes the destruction of the functionality of the references. The Examiner states the motivation to combine the Shimizu and Godsoe references is:

one would have been motivated to use the linear tape threading system as taught by Godsoe [with the tape loading system of Shimizu] since it does not require an external force to accomplish the threading of the magnetic tape through the tape loading path.

(Examiner's Office Action, page 4, line 3, dated May 23, 1995.) The object of the Shimizu reference is to provide a plurality of tape transport functions, driven by a single drive motor. (See Shimizu, column 2, line 34.) The substitution of the "constant force" spring and substantially linear tape path of Godsoe would remove the requirement of the external force (i.e., the drive motor) to accomplish the threading of the magnetic tape through the tape loading path, but would simultaneously destroy the functionality of insertion/ejection, pivotally engaging and threading and tape cartridge ejecting. Appellants submit, therefore, there is no motivation to combine the Shimizu and Godsoe references.

Appellants submit that the Examiner has improperly combined the Shimizu and Godsoe references. A §103 rejection based upon a modification of a reference that destroys the intent, purpose or function of the invention disclosed in the reference is not proper and the prima facie case of obviousness cannot be properly made. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). *Since the intended function of Shimizu is destroyed when modified by Godsoe, there is no technological motivation for engaging in the modification of Shimizu.*

Appellants further submit that the Examiner has not provided any teaching which would motivate a person skilled in the art to modify the teachings of either Godsoe or Shimizu to produce a single reel tape cartridge helical scan tape transport with the form factor of Appellants' invention. Accordingly, Appellants respectfully request that the Board overturn the Examiner's grounds of rejection for claims 1, 3-5, 7-9, 11 and 12 under 35 U.S.C. § 103.

b. The extraordinary commercial success and industry embracement of Appellants' claimed invention are evidence that Appellants' claimed invention would not have been obvious to one of ordinary skill in the relevant art.

Assuming, *arguendo*, that a *prima facie* case of obviousness has been made, Appellants traversed the rejections based on the overwhelming commercial success of an embodiment of the claimed invention as evidenced by the concurrently submitted Declaration. The Supreme Court, in its seminal decision, held that *not only* must the factual inquiries of determining the scope and content of the prior art, the differences between the prior art and the claims, and the level of ordinary skill in the pertinent art accompany any obviousness analysis, *but also, indicia* of "secondary considerations," including commercial success, have relevancy. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Indeed, evidence of "secondary considerations" may often be "the most probative and cogent evidence in the record." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538, 218 USPQ 871, 879 (Fed. Cir. 1983). As such, "secondary considerations" must be considered as part of all the evidence. *See, e.g., Simmons Fastener Corp. v. Illinois Tool Works Inc.*, 739 F.2d 1573, 222 USPQ 744 (Fed. Cir. 1984). In *Simmons*, the Federal Circuit *agreed* with the trial

court that "the teachings of the prior art *prima facie* would have suggested to one of ordinary skill in the art the claimed invention." *Simmons*, 739 F.2d at 1575-1576, 222 USPQ at 747. Notwithstanding such a finding, however, the Federal Circuit *reversed* the lower court and in doing so found that the invention was patentable because of secondary considerations. Moreover, immediate and substantial commercial success may be given substantial weight when a *nexus* between the merits of the claimed invention and the offered evidence clearly exists. *Sjolund v. Musland*, 847 F.2d 1573, 6 USPQ2d 2020 (Fed. Cir. 1988); *Cable Elect. Prod., Inc. v. Genmark, Inc.*, 770 F.2d 1015, 226 USPQ 881 (Fed. Cir. 1985); *Cf., Newell Cos., Inc. v. Kenny Mfg. Co.*, 864 F.2d 757, 9 USPQ2d 1417 (Fed. Cir. 1988), *cert. denied*, 493 U.S. 814 (1989); *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 21USPQ2d 1053 (Fed. Cir. 1991).

Accordingly, the Federal Circuit has consistently held that objective evidence of "secondary considerations" *must* always be taken into account and "not just when the decisionmaker [sic] remains in doubt after reviewing the art." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-1539, 218 USPQ 871, 879 (1983); *The Gillette Co. v. S.C. Johnson & Son, Inc.*, 919 F.2d 720, 16 USPQ2d 1923 (Fed. Cir. 1991); *Minnesota Mining and Mfg. Co. v. Johnson & Johnson*, 976 F.2d 1599, 24 USPQ2d 1321 (Fed. Cir. 1992); *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 USPQ 81 (Fed. Cir. 1986). Thus, the consideration of commercial success as evidence is *not* discretionary, but rather mandatory. Indeed, it is an error to exclude such evidence en route to a determination on obviousness. *Stratoflex*, 713 F.2d at 1539, 218 USPQ at 879.

The Examiner has erroneously stated that the commercial success cited in the Declaration of Mr. Sam Cheatham is not due to claimed features of Appellants' invention. Appellants'

disagree. The Declaration describes the extraordinary commercial success of the claimed invention, i.e., a helical scan tape transport for a single reel tape cartridge with a form factor fully compatible with its predecessor's longitudinal tape transports (e.g., the Storage Timberline™ (36-track)). (See, Declaration, paragraphs 1-4.) The Examiner erroneously argues that "claims 1, 3, 4, 9, 11 and 12 do not even recite the form factor feature and therefore the evidence of commercial success is not seen to be commensurate in scope with the claims." Appellants have repeatedly referred to *form factor* as the physical layout of a tape transport. (See, e.g., page 3, line 25 of Appellants' Application; page 3, line 4 of Amendment B; Declaration, paragraph 4, line 3) Appellants' submit that the form factor of the helical scan transport for a single reel tape cartridge (i.e., the layout of the components) is embodied and defined in claims 1, 3, 4, 9, 11 and 12. See, for example, claim 1, which reads as follows:

A helical scan transport apparatus for reading and writing data onto a magnetic recording tape which is wound on a supply reel rotatably mounted within a removable tape cartridge, wherein the tape has a leader block attached to one end for use in withdrawing the end from the tape cartridge, the transport comprising:

a chassis having a front end portion and rear end portion;
an elevator assembly mounted on said chassis at said front end, . . .

a take-up reel assembly coupled to said chassis at said rear end portion;

a helical deck mounted on a central portion of said chassis between said elevator assembly and said take-up reel assembly, said helical deck including a rotary read/write head, a substantially linear tape loading path between said elevator assembly and said take-up reel assembly . . .

Thus, as recited in the claims, the helical transport of the invention includes a take-up reel, an elevator assembly and a helical deck arranged in a substantially linear configuration on a chassis. This form factor defines the invention. Conventional helical transports (e.g., video

tape recorders) use a two reel cassette. The cassette disposes the take-up and supply reels side-by-side. This prevents such transports from meeting the form factor required for use with a model 4400 ACS. Furthermore, conventional transports for use with single reel cartridges tend to have closely adjacent supply and take-up reels that permit use of a tape loading mechanism that operates in an arcuate path. The prior art has provided no suggestion to use a substantially linear tape threading path with a helical deck and a single reel cartridge.

The extraordinary commercial success and industry embracement of an embodiment of the claimed invention, the StorageTek RedWood™ SD-3 Helical Scan Transport ("RedWood"), further support Appellants' position that the present invention would not have been obvious to one of ordinary skill in the art. (*See*, Declaration, paragraphs 1-4 and 8-11.) In accordance with the claimed invention, the RedWood is a *helical scan tape transport* for a *single reel tape cartridge* with a *form factor* fully compatible with its predecessor longitudinal tape transports (*e.g.*, the StorageTek Timberline™ (36-track), Silverston™ (36-track), and model 4480 (18-track)). (*See*, Declaration, paragraphs 1-4.) As such, the RedWood *form factored* solution provides several significant advantages over the transport solutions of StorageTek's competitors, including full automated library compatibility, enhanced user versatility, and low-cost-of-ownership benefits. (*See*, Declaration, paragraphs 5-7.)

In fact, the actual and projected sales of the RedWood are meeting or exceeding expectations of both StorageTek and data processing industry analysts alike. (*See*, Declaration, paragraphs 8-9.) Correspondingly, StorageTek has projected that the RedWood would acquire a 5% share of all transports sales as early as March 1996, which is *only* 13 months from its commercial announcement. (*See*, Declaration, paragraph 8.)

By comparison, the current (at the time that the Declaration was prepared) leading supplier of dual reel helical transports, E-Systems Inc., has *only* acquired approximately a 2-4% market share over the *more than* 24 months since its 1993 introduction. (See, Declaration, paragraph 9.) While StorageTek forecasts that RedWood's commercial success will motivate its competitors to follow suit and attempt to provide *form factored* transports for *single reel helical tape cartridges*, it is not expected that any such competitors' products will be on the market for at least several years due to the significant development and tooling efforts involved. (See, Declaration, paragraph 16.)

The data processing industry's high expectations for the RedWood are also evidenced by the significant commitments and increasing interest of worldwide tape cartridge manufacturers, including 3M Inc. and other major tape manufacturers in Europe and Japan. (See, Declaration, paragraph 10.) In addition, acceptance of the RedWood solution is evidenced by the adoption by the European Computer Manufacturers Association (ECMA) of the SD-3 recording standard format and tape interchange used with the RedWood. Similar standard proposals are currently before the American National Standards Institute (ANSI) and the International Organization for Standardization (IOS). (See, Declaration, paragraph 11.)

This extraordinary commercial success and industry acceptance of the RedWood is not the result of heavy promotion or advertisement, market demands, or any other extraneous business, but rather is materially attributable to the merits of the claimed invention (*i.e.*, a *helical scan transport* for a *single reel tape cartridge* with the *form factor* feature) and its corresponding advantages (*e.g.*, compatibility, versatility, and low-cost-of-ownership). (See, Declaration,

paragraphs 12-15.) Since such a clear *nexus* does exist, it is proper for such evidence to be given significant weight in an obviousness analysis.

c. Neither Appellants' admitted prior art, nor the automated cartridge system of Moy remedy the defects of the Examiner's improper rejection under §103.

Appellants' admitted prior art of the Panasonic D350 helical deck does not remedy the defects of the Examiner's improper rejection of claims 1, 3-5, 7-9, 11 and 12 under § 103. The Examiner has improperly combined the Shimizu and Godsoe references, which teach tape transports which read and write in the longitudinal format. Appellants' admitted prior art of the D350 is cited by the Examiner as being an obvious element to combine with the improper combination of Shimizu and Godsoe because:

One of ordinary skill in the art at the time of the invention would have been motivated to use the helical deck as taught by Appellant's admitted prior art on page 8, lines 18-27, since it allows tape cartridges written in helical scan format to be read by the tape loading system.

(Examiner's Office Action, page 4, line 16, dated May 23, 1995.)

Assuming *arguendo*, that the Examiner's motivation to combine the Panasonic D350 helical deck with the improper combination of Shimizu and Godsoe does not constitute impermissible hindsight or circular reasoning, the Appellants' admitted prior art does not teach the arrangement of the tape transport as claimed in claims 1, 3-5, 7-9, 11 and 12.

Similarly, the automated cartridge system of Moy does not remedy the defects of the Examiner's improper rejection of claims 1, 3-5, 7-9, 11 and 12 under § 103. Moy merely teaches

the automated cartridge system for storing large numbers of cartridge style tapes. Moy does not teach the arrangement of the tape transport as claimed in claims 1, 5 and 9. Because neither Appellants' admitted prior art, nor Moy disclose the claimed invention, Appellants respectfully requests that the Board overturn the Examiner's grounds of rejection for claims 1, 3-5, 7-9, 11 and 12 under 35 U.S.C. § 103.

CONCLUSION

For the reasons set forth above, Appellants have shown the invention recited by claims 1, 3-5, 7-9, 11 and 12 on appeal are not rendered obvious by the Shimizu reference in view of Godsoe, in view of Appellants' admitted prior art, further in view of Moy under 35 U.S.C. § 103.

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Appellant therefore requests that this honorable Board reverse the Examiner's final rejection and further order the Examiner to allow all pending claims.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



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P23-09.WPD

APPENDIX A

1 1. A helical scan transport apparatus for reading and writing data on to a magnetic recording
2 tape which is wound on a supply reel rotatably mounted within a removable tape cartridge,
3 wherein the tape has a leader block attached to one end for use in withdrawing the end from the
4 tape cartridge, the transport comprising:

5 a chassis having a front end portion and a rear end portion;

6 an elevator assembly mounted on said chassis at said front end, said elevator assembly
7 configured to receive the tape cartridge and to position the tape cartridge in a loaded position;

8 a take-up reel assembly coupled to said chassis at said rear end portion;

9 a helical deck mounted on a central portion of said chassis between said elevator
10 assembly and said take-up reel assembly, said helical deck including a rotary read/write head,
11 a substantially linear tape loading path between said elevator assembly and said take-up reel
12 assembly, and a movable guide for seizing the tape from said tape loading path and for at least
13 partially wrapping the tape around said rotary head; and

14 a raised linear threading mechanism, including a linear bearing, a threading arm and a
15 threading cam,

16 wherein said bearing, said arm, and said cam are operably configured to grasp the leader
17 block of the tape, thread the tape through said tape loading path of said helical deck, and couple
18 said leader block to said take up reel assembly.

1 3. The helical scan transport apparatus of claim 1, further comprising a supply reel drive
2 assembly co-located with said elevator assembly, said supply reel drive assembly configured to
3 couple with the supply reel of the cartridge and to rotatably drive the supply reel.

1 4. The helical scan transport apparatus of claim 3, wherein said take-up reel assembly
2 comprises a take-up reel and a servomotor coupled to said take-up reel

1 5. a helical scan transport apparatus for reading and writing data on to a magnetic recording
2 tape which is wound on a supply reel rotatably mounted within a removable tape cartridge,

3 wherein the tape has a leader block attached to one end for use in withdrawing the end from said
4 tape cartridge, the transport dimensioned to fit within a rectangular enclosure measuring
5 approximately twelve and one-half inches wide by twenty-six and one-half inches deep and
6 configured such that a plurality of the transport apparatuses may be stacked within the enclosure
7 with a vertical spacing of eleven inches on center, the transport apparatus and enclosure for use
8 with an automated cartridge system, the apparatus comprising:

9 a chassis having a front end portion and rear end portion, said front end portion extending
10 seven inches outward from the enclosure and configured to mate with the automated cartridge
11 system when said enclosure is coupled to a housing of the automated cartridge system;

12 an elevator assembly mounted on said chassis at said front end, said elevator assembly
13 configured to receive a tape cartridge from the automated cartridge system and to position the
14 tape cartridge in a loaded position;

15 a take-up reel assembly coupled to said chassis at said rear end portion;

16 a helical deck mounted on a central portion of said chassis between said elevator
17 assembly and said take-up reel assembly, said helical deck including a rotary read/write head,
18 a substantially linear tape loading path between said elevator assembly and said take-up reel
19 assembly, and a movable guide for seizing the tape from said tape loading path and for at least
20 partially wrapping the tape around said rotary head; and

21 a raised linear threading mechanism, including a linear bearing, a threading arm, and a
22 threading cam,

23 wherein said bearing, said arm, and said cam are operably configured to grasp the leader
24 block of the tape, thread the tape through said tape loading path of said helical deck and couple
25 said leader block to said take-up reel assembly.

1 7. The helical scan transport apparatus of claim 5, further comprising a supply reel drive
2 assembly co-located with said elevator assembly, said supply reel drive assembly configured to
3 couple with the supply reel of the cartridge and to rotatably drive the supply reel.

1 8. The helical scan transport apparatus of claim 7, wherein said take-up reel assembly
2 comprises a take-up reel and a servomotor coupled to said take-up reel.

1 9. a helical scan transport apparatus for reading and writing data on to a magnetic recording
2 tape supplied in a single reel tape cartridge, the transport comprising:

3 a chassis having a front end portion and a rear end portion;

4 an elevator assembly mounted on said chassis at said front end, said elevator assembly
5 configured to receive the single reel tape cartridge and to position the single reel tape cartridge
6 in a loaded position;

7 a take-up reel assembly coupled to said chassis at said rear end portion;

8 a video tape recorder helical deck mounted on a central portion of said chassis between
9 said elevator assembly and said take-up reel assembly, said helical deck including a rotary
10 read/write head, a substantially linear tape loading path between said elevator assembly and said
11 take-up reel assembly, and a movable guide for seizing the tape from said tape loading path and
12 for at least partially wrapping the tape around said rotary head; and

13 a linear threading mechanism configured to grasp a leader block of the single reel tape
14 cartridge, thread the tape through said tape loading path of said helical deck, and couple said
15 leader block to said take-up reel assembly.

1 11. The helical transport apparatus of claim 9, further comprising a supply reel drive
2 assembly co-located with said elevator assembly, said supply reel drive assembly configured to
3 couple with the supply reel of the cartridge and to rotatably drive the supply reel.

1 12. The helical scan transport apparatus of claim 11, wherein said take-up reel
2 assembly comprises a take-up reel and a servomotor coupled to said take-up reel.